MMHCC
the Mouse Models
of Human Cancers Consortium

MMHCC Newsletter May 2007

MouseLine

New Molecular Imaging Compound Pinpoints Metastases in Mice

Researchers have created a new imaging compound that fluoresces only when processed by cancer cells. Use of this compound allowed scientists to visualize 92 percent of the very small tumors in the peritoneum - the tissue that lines the wall of the abdomen - in mice with ovarian cancer. The results were published in the March 15 *Cancer Research*.
The team led by Dr. Hisataka Kobayashi from the Molecular Imaging Program in NCI's Center for Cancer Research (CCR) created a compound consisting of the protein avidin, which binds to a protein commonly found on cancer cells that have spread to the peritoneum, joined to three molecules of the fluorescent compound rhodamine X. This complex, called Av-3ROX, is taken up by a cancer cell after binding to its surface and is subsequently broken down in the lysosome. When enzymes in the lysosome break the molecule into smaller pieces, the fluorescence from rhodamine X is released, enabling the cancer cell to be detected using imaging techniques.
To verify that Av-3ROX was specifically internalized into tumor cells, the investigators used cells that carried the gene for red fluorescent protein (RFP) to induce tumors and peritoneal metastases in mice. The investigators injected Av-3ROX into the peritoneum of the mice, captured fluorescent images of both Av-3ROX and RFP, and compared the number of metastases identified using both compounds. They found that Av3-ROX had 92 percent sensitivity and 98 percent specificity for the cancer cells.
Because Av-3ROX would cause an immune system reaction in humans, the researchers are now working on a second-generation compound that joins the binding site of avidin - the part that recognizes the cancer cells - to human serum albumin. The authors believe that this approach to molecular imaging "holds promise as a method of optically enhancing surgical or endoscopic procedures," and may allow for more complete surgical removal of metastatic disease.

Source: NCI Bulletin
http://www.cancer.gov/ncicancerbulletin/NCI_Cancer_Bulletin_032007/page4

Publication:
Hama Y et al.
A target cell-specific activatable fluorescence probe for in vivo molecular imaging of cancer based on a self-quenched avidin-rhodamine conjugate.
Cancer Res. 2007 Mar 15; 67(6):2791-9.
PMID: 17363601

After the AACR Meeting

Based on the feedback from the AACR annual meeting, interest in the NCI's MMHCC and caBIG programs and resources continues to grow. Currently there are more than 40 free software tools available, including the cancer Models Database (caMOD). If you did not get a chance to visit the caMOD poster at the AACR, the poster and related materials are available online at https://gforge.nci.nih.gov/docman/index.php?group_id=275&selected_doc_group_id=1237&language_id=1 For more information about caMOD and caBIG software tools, please see tools inventory, https://cabig.nci.nih.gov/tools/

We encourage you to submit your new animal models in caMOD to keep this valuable resource up-to-date. Please contact the NCICB application support team (Telephone: 301-451-4384 or toll free: 888-478-4423; Email: ncicb@pop.nci.nih.gov) if you have questions about caMOD or require assistance for submitting models to caMOD.

Funding Opportunities

Development of Animal Models and Related Biological Materials For Research (R21)
PA-07-336
National Center for Research Resources
http://grants.nih.gov/grants/guide/pa-files/PA-07-336.html

Developing And Improving Institutional Animal Resources (G20)
PAR-07-342
National Center for Research Resources
http://grants.nih.gov/grants/guide/pa-files/PAR-07-342.html

Addendum to PAR-07-342, Developing and Improving Institutional Animal Resources (G20)
NOT-RR-07-011
National Center for Research Resources
http://grants.nih.gov/grants/guide/notice-files/NOT-RR-07-011.html

Exploratory Cancer Prevention Studies Involving Molecular Targets for Bioactive Food Components (R21)
PA-07-362
National Cancer Institute
National Institute on Aging
Office of Dietary Supplements
http://grants.nih.gov/grants/guide/pa-files/PA-07-362.html

Meetings

May 26 – 29, 2007
6th Annual Meeting of the Complex Trait Consortium - (CTC 2007)
Braunschweig, Germany
Meeting Information: http://www.helmholtz-hzi.de/en/ctc

May 30 – June 2, 2007
Approaches to Complex Pathways in Molecular Epidemiology
Santa Ana Pueblo (Albuquerque), New Mexico
Meeting Information: http://www.aacr.org/home/scientists/meetings--workshops/special-conferences/approaches-to-complex-pathways-in-molecular-epidemiology.aspx

June 1 - 5, 2007
43rd ASCO Annual Meeting
Chicago, Illinois
Meeting Information: http://www.asco.org

June 5 – 8, 2007
22nd Annual Offering of Critical Issues in Tumor Microcirculation, Angiogenesis and Metastasis: Biological Significance and Clinical Relevance
Cambridge, Massachusetts
Meeting Information: http://www.cme.hms.harvard.edu/courses/criticalissues or http://steele.mgh.harvard.edu

June 12 – 13, 2007
Cambridge Healthtech Institute-Sixth Annual World Pharmaceutical Congress: Trends in Pharmaceutical Development
Philadelphia, Pennsylvania
Meeting Information: http://www.WorldPharmaCongress.com

June 15, 2007
Symposium: Systems Biology
Cambridge, Massachusetts
Meeting Information: http://web.mit.edu/ccr/news/symposium.htm

Meetings cont.

June 17 – 20, 2007
10th Cancer Research UK Beatson International Cancer Conference:
Molecular Cancer Therapies: New Challenges and Horizons
Glasgow, Scotland
Meeting Information: http://www.beatson.gla.ac.uk/conf

Please consult the calendar on the Emice website for more information about upcoming events, workshops and meetings.
http://emice.nci.nih.gov/emice/communication/calendar

Repository News

MMHCC Repository: Change in Policy for Distribution of Cryoarchived Strains

All mouse models distributed through the MMHCC Repository are cryopreserved at NCI-Frederick. Forty of the highest demand strains are maintained as live breeding colonies. The remainders are cryoarchived. Quality control procedures have been established to verify that mice of the proper genotype can be recovered from the frozen material. In spring of 2005 the Repository started to distribute cryoarchived strains as vials of frozen embryos packed in liquid nitrogen dry shippers. Over the last two years only about 50% of the recipients were successful in recovering mice from the frozen material. As a consequence of the low success rate the Repository will adopt a new policy for the distribution of cryoarchived strains. Starting in May, 2007 requesters will have the option of receiving live animals or frozen embryos. Reconstitution will be performed by the Repository free of charge, but the requestor will be responsible for all shipping costs. Cryorecovered mice will be genotyped and tested for mouse pathogens prior to shipment. At least one mutant carrier will be delivered within 16-20 weeks. The Repository will continue to supply frozen embryos to institutions that routinely perform cryorecoveries and to international recipients, to avoid the complications of importation.

Please note that The Jackson Laboratory (Bar Harbor, Maine) now offers two workshops a year on shipping and reconstitution of cryopreserved embryos: http://www.jax.org/courses/events/current.do

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